Date: November 13, 2015
Subject: DEQ Comments – Draft Remedial Investigation/Feasibility Study Work Plan and Phase I Site Characterization Sampling and Analysis Plan, Columbia Falls Aluminum Company Facility, Flathead County, Montana (November 2, 2015).

Note that DEQ comments reference pages in the PDF version of the Draft Remedial Investigation/Feasibility Study Work Plan (RI/FS Work Plan) and Phase I Site Characterization Sampling and Analysis Plan (SAP) dated November 2, 2015 and not the redline-strikeout word versions of the documents.

General Comments – RI/FS Work Plan and SAP

1. General Comment: Throughout the documents, there are references to "screening" and "guidance" related to the Circular DEQ-7 Numeric Water Quality Standards (DEQ-7 standards). Please revise throughout to clarify that the DEQ-7 standards are *standards*. See in particular Page 35, Section 3.1.4.

2. General Comment: According to the USGS National Hydrology Dataset, a tributary to Cedar Creek flows (or has historically; or the stream may have been filled in or become a subsurface feature) east of the Industrial Landfill and to the southwest, joining Cedar Creek approximately ½ mile to the southwest of the landfill. A Palustrine Scrub-Shrub (PSSA) wetland is identified in this area by the National Wetlands Inventory. Another small PSSA wetland is noted south of the Industrial Landfill. None of these features are shown on RI/FS Work Plan or SAP maps or figures, nor are they discussed in either document. Revise to include discussion of all known wetland and surface water features. This comment applies specifically to Page 7, Section 2.5.1; Page 49, Section 3.2.6.1; and Figure 3. Also, please note that the "seeps" as defined in Outfall 6 of the 2014 MPDES permit are not consistent with the seeps shown on Figure 3.

3. General Comment: DEQ notes that there is a lack of attention in the RI/FS Work Plan and associated SAP to hydrology and potential contaminant transport as it relates to Cedar Creek and site groundwater (refer to Plate 1 of the SAP). This is particularly noticeable in the upgradient area around and southwest of the Industrial Landfill. DEQ recommends adding borings (similar to those described in Section 5.5 (Figure 18) and potentially monitoring wells (as per Section 5.6) in appropriate locations south and west of the Industrial Landfill.

Specific RI/FS Work Plan Comments

1. Page 3, Section 2.1, 3rd paragraph: Please note that the 1999 MPDES permit is no longer in effect and has been replaced by a renewed 2014 MPDES permit. Certain conditions of the 2014 permit have been stayed as a result of CFAC's current permit appeal; however, all other conditions remain current and enforceable. Please revise to state this throughout the document where the 1999 permit is referenced.

2. Page 8, first full paragraph: Please verify these numbers. It is DEQ's understanding of the data that the numbers are (underlined): "Data collected in 2014 from the Columbia Falls USGS station indicated that the discharge of the Flathead River ranged from a minimum of 4,200 ft^3/s in December to a maximum of 46,200 ft^3/s in May."

3. Page 14, Section 2.7.1: Clarify whether the initial property owner (1951 to 1978) was the Anaconda Copper Mining Company or the Anaconda Aluminum Company.

4. Page 16, last paragraph: Please change the permit number to "MGWPCS0005."

5. Page 17, Section 2.7.2: Language added regarding the MPDES permit is duplicative of information provided in the paragraph above. Delete. In addition, this section references an historical permit, not the current MPDES permit. Clarify by using past rather than present tense when referencing locations etc. If EPA determines that it is appropriate for this section to remain, please make the following changes to ensure accuracy:

    - First paragraph: Please revise as follows: "The plant was permitted to discharge ~~indirectly~~ to the groundwater. In 1993, CFAC applied for MPDES permit for the groundwater, contaminated by historical spent potlining disposal practices, released to the Flathead River. Permit MT-0030066 was issued in 1994 authorizing CFAC to discharge process wastewater from its aluminum reduction plant but not groundwater contaminated from historical disposal practices, to ground waters discharging to the Flathead River."
    - First paragraph: Please add discussion of the current 2014 permit to ensure a complete discussion of the history.
    - Second paragraph: Please revise: "A mixing zone in Montana means an area established in a permit where water quality standards may be exceeded, ~~subject to conditions and rules of~~ as defined in Montana Code Annotated 75-5-103(21)."

6. Page 22, Section 2.8.9: Please provide a reference for the source of the "residential risk-based criteria" used. Also, please note that the cyanide residential RSL for soil is 2.7 mg/kg, and state how the results compare to the current criteria.

7. Page 23, Section 2.8.10: Please add that EPA's inspection report noted violations of the permit limitations and also stated: "This groundwater has definitely been affected by past CFAC operations and practices as evidenced by the high levels of cyanide and fluoride. The seeps are unpermitted discharges to the Waters of the United States." The report also noted: "The unpermitted seeps discharging into the Flathead River must be addressed. This must be done either through obtaining either a MPDES permit, which will require that the discharges be treated to meet designated standards or the discharges must cease." DEQ recommends inclusion of this report as an appendix to the RI/FS work plan.

8. Page 23, Section 2.8.11: This comment was partially addressed by correcting the year. However, revise further to read: "The site was referred from the MDEQ CECRA list to the Hazardous Waste Program. The Site has also been regulated by…"

9. Page 26, Section 2.8.15, 3rd bullet: Revise "MT Circular 7 HSL…" to read "Montana Circular DEQ-7 Human Health Standard…"

10. Page 27, Section 2.8.15: This section states: "All of the Seep samples and all of the Flathead River surface water samples passed the WET tests, indicating no acute toxicity." Please delete "indicating no acute toxicity," because such a broad conclusion cannot be drawn from the WET tests.

11. Page 32, Section 3.1.3, last paragraph: Please delete this sentence, as there have been some violations of the permit terms: "In addition to the recent sampling performed as part of the Site reassessment activities, groundwater conditions have been monitored on an ongoing basis since the mid-1980s pursuant to the MPDES permit and in general have maintained an overall good record of compliance."

12. Page 35, Section 3.1.4: Please add 1999 to this sentence: "Surface water data collected within the Flathead River generally indicate no exceedances of water quality standards or guidance values, with the exception of the 1999 permitted mixing zone around the identified seepage area." Also, please add: "An acute mixing zone for cyanide was not granted in the 2014 renewal; however, this issue is currently under appeal."

13. Page 39, Section 3.2.1.2, 4th paragraph: This section refers to "pot digging material," which is an undefined term. Revise to include a description of this material and its origin.

14. Page 39, Section 3.2.1.2, 4th paragraph: This section refers to an EPA Regional Screening Level of 1,600 mg/kg for cyanide. Please include the current cyanide residential RSL for soil of 2.7 mg/kg. Please revise.

15. Page 43, Section 3.2.2.4: Please revise this sentence, as the wastewater enters from the west end of the pond. "Wastewater enters the South Percolation Pond system from a concrete pipe located on the ~~east~~ west end of the pond system.

16. Page 46, Section 3.2.3.1, 2nd paragraph: Please indicate the potential location of the cathode soaking pits on an RI/FS Work Plan map and reference that figure here.

17. Page 49, Section 3.2.6.1: Given the limited information regarding hydrology in this area it is premature to state that groundwater from the Site does not reach Cedar Creek. Revise the first

sentence to reflect this uncertainty (i.e., "Cedar Creek is fairly shallow, and based on current site information, groundwater from the Site may not recharge into Cedar Creek .").

18. Page 49, Section 3.2.6.3: Please revise: "As described in Section 2.8.15, a portion of the Seep water is tested quarterly ~~for aquatic toxicity~~ using WET testing pursuant to CFAC's 2014 MPDES permit."

19. Page 55, Section 3.3.2.2, 1st paragraph: Refer to comment for Section 3.2.6.1 above addressing the lack of definitive information regarding a connection between Cedar Creek and site groundwater. Revise here to reflect that uncertainty (i.e., "...site information indicates that Cedar Creek is higher in elevation than groundwater within the Site, indicating that Cedar Creek may not be a potential discharge point for groundwater.").

20. Page 56, Section 3.3.2.3: Include Cedar Creek in this discussion and provide preliminary discussion regarding whether the creek provides biological habitat or is used for recreation by nearby residents and/or visitors.

21. Page 59, Section 3.4.2: For consistency, add "In-Situ Treatment" (as referenced in Section 3.4.2.3) to the bulleted list of alternatives.

22. Page 61, Section 3.6, last paragraph: Please delete this sentence: "A more detailed list of action-specific ARARs and TBCs will be presented in the FS, once remedial alternatives are identified." Please replace it with: "The Agencies will provide more detailed list of action-specific ARARs and TBCs, which will be presented in the FS, once remedial alternatives are identified."

23. Page 61 and 62, Section 3.6.1: DEQ will identify additional preliminary ARARs as part of the feasibility study. However, please add the following key chemical-specific ARARs:
    - ARM 17.30.1005 and –1006 provide that groundwater is classified I through IV based on its beneficial uses and set the standards for the different classes of groundwater. All beneficial uses of groundwater must be protected. In addition to the Circular DEQ-7 Numeric Water Quality Standards listed above, concentrations of other dissolved or suspended substances must not exceed levels that render the waters harmful, detrimental or injurious to beneficial uses.
    - ARM 17.30.608 provides that the waters of the Flathead River are classified as B-1 for water use. The B-3 classification standards are contained in ARM 17.30.623 (applicable) of the Montana water quality regulations. This section provides the water quality standards that must be met and beneficial uses for the water use classifications, which must be protected.

24. Page 62, Section 3.6.2, #4: Please revise this as follows: "Montana Pollutant Discharge Elimination System (MPDES) program and ARM 17.24.633 contain provisions to control

sediment and stormwater discharges ~~point source discharges of wastewater~~ such that water quality in state surface water is protected.

25. Page 62, Section 3.6.2: Please add the following key action-specific ARARs:
    - ARM 17.8.304, 17.8.308, 17.8.220, and 17.8.223 include requirements to address emission of particulate matter and dust control that must be complied with during remedial actions.
    - ARM 17.8.604 lists certain wastes that may not be disposed of by open burning.
    - Montana Solid Waste Management Act and regulations, §§ 75-10-201, *et seq.*, MCA, ARM 17.50.101 *et seq*. Regulations promulgated under the Solid Waste Management Act, § 75-10-201, *et seq*., MCA, and pursuant to the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 *et seq*. (RCRA Subtitle D) specify requirements that apply to the to the transportation of solid wastes and the operation, closure and post-closure care of solid waste facilities, including liner and cover requirements. These requirements would apply to any transportation, management, or disposal of solid waste onsite.
    - ARM 17.74.369 specifies requirements for the management, transportation, and disposal of asbestos.

26. Page 63, Section 3.6.3: Please add the following key location-specific ARARs:
    - Regulations promulgated under the Solid Waste Management Act, §§ 75-10-201 *et seq*., MCA, specify requirements that apply to the location of any solid waste management facility. These regulations include, among other things, prohibition on disposal of solid waste in a floodplain or in a wetland.
    - The Floodplain and Floodway Management Act, §§ 76-5-101, *et seq*., MCA, and associated regulations specify requirements for activities in the floodplain or floodway. These requirements include, among other things, a prohibition on solid and hazardous waste disposal and storage of toxic, flammable, hazardous, or explosive materials are prohibited anywhere in floodways or floodplains.

27. Page 67, Section 4.1, Soil Quality: Add a bullet regarding collection and analysis of soil samples to evaluate fate and transport processes.

28. Page 75, Section 5.2.4.1, 2nd paragraph: DEQ typically requires that soil gas probes be placed no less than 5 feet below ground surface (bgs) to minimize potential interference from ambient conditions, including temperature, barometric pressure, etc. Revise to install probes, where ever feasible, at a minimum of 5 feet bgs.

29. Page 76, Section 5.2.4.2, 2nd paragraph: Refer to comment above for Section 5.2.4.1. DEQ recommends that soil gas samples are collected at a minimum of 5 feet bgs. Revise as appropriate.

30. Page 82, Section 5.5, 2nd paragraph, 1st sentence: Figure 18 appears to be referenced here, rather than Figure 17. Revise as appropriate. In addition, DEQ notes that, without additional information regarding potential for aerial deposition etc. indicating that these areas are not impacted by historical site operations, the specified locations may not be appropriate for obtaining background soil information.

31. Page 95, Section 6.1.2, Soil: Please also screen soil against Montana Tier 1 Risk-based Corrective Action Guidance for Petroleum Releases (September 2009) for petroleum compounds. Please screen sediment against U.S. Environmental Protection Agency Region 3 Biological Technical Assistance Group Freshwater Sediment Screening Benchmarks (August 2006). Please add a screening for vapor intrusion, and compare indoor air and soil vapor concentrations to the residential air and industrial air screening levels contained in the most recent U.S EPA *Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites*.

32. Page 101 and 102, Section 7.2: Please clarify that the Agencies will provide the preliminary remedial action objectives.

33. Plate 3: For consistency, please make the following revisions to this figure:
    - The percolation pond north of the main facility is referred to as "East Percolation Pond." Please label this pond as the "North-East Percolation Pond" to be consistent with other references in the RI/FS Work Plan and SAP. Ensure this feature is referenced consistently throughout both documents.
    - Page 46 refers to sampling Drywell 31, but only Drywell 31-8 appears to be indicated on the figure. Revise to show Drywell 31 or revise the reference in the RI/FS Work Plan to be consistent with Plate 3.

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34. Page 2, Section 2.1, last paragraph: Please revise this sentence in order to clarify that the MPDES permit does not cover each of these features: "The Site also includes seven closed landfills, one active landfill, material loading and unloading areas, two closed leachate ponds, and several wastewater percolation ponds ~~operating under MPDES permits~~."

35. Page 4, Section 2.2, last paragraph: Please revise this sentence: "The facility discharged to the percolation ponds in accordance with a MPDES permit, first issued in ~~1985~~1994." The first MPDES permit was not issued until 1994. Prior to that, the permit was a Montana Ground Water Pollution Control System (MGWPCS), which was issued in 1984.

36. Page 8, Section 4.1: Refer to DEQ Comment in the RI/FS Work Plan for Section 6.1.2 and also screen soil against Montana Tier 1 Risk-based Corrective Action Guidance for Petroleum Releases (September 2009) for petroleum compounds. Please screen sediment against U.S. Environmental Protection Agency Region 3 Biological Technical Assistance Group Freshwater Sediment Screening Benchmarks (August 2006). Please add a screening for vapor intrusion, and

compare indoor air and soil vapor concentrations to the residential air and industrial air screening levels contained in the most recent U.S EPA *Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites*.

37. Pages 14 and 15, Section 4.5: Refer to comments above on the RI/FS Work Plan regarding soil gas sample collection. DEQ typically requires that soil gas probes and samplers be placed no less than 5 feet below ground surface (bgs) to minimize potential interference from ambient conditions including temperature, barometric pressure, etc. Revise to install probes, where ever feasible, at a minimum of 5 feet bgs.

38. Page 17, Section 4.6.1, 4th paragraph: It is unclear whether the samples collected at these intervals will be discrete samples or incremental samples collected across the intervals specified. Please add further description for clarification.

39. Page 17, Section 4.6.1, 4th paragraph: DEQ typically requires sieving of samples for metals analysis, particularly lead, given the demonstrated tendency for lead to be concentrated in the finer fraction of soil. During Phase I of initial site characterization, DEQ recommends that a portion of the samples from the shallow interval (0-6 inches) be laboratory analyzed in both sieved (250 microns/No. 60 sieve) and bulk form, with a representative number of samples laboratory-analyzed in both forms. The samples selected for both analyses should account for different sources, lithology, or other characteristics that could influence the ratio between sieved and unsieved sample concentrations. Analysis of both types of samples for 20% of the samples is appropriate. Once the two sets of data are available, a ratio of sieved analysis to bulk analysis can be calculated for each sample, and then a 95% upper confidence level (UCL) on the mean of all the ratios can be calculated. The UCL of the ratios may then be used as a factor that can be applied to historic, current, and future bulk samples collected for characterization or confirmation sampling without the need for further sieved sampling. This comment also applies to Page 20, Section 4.6.2, 2nd paragraph.

40. Page 18, Section 4.6.1: Although Section 4.11 generally indicates that samples will be collected to facilitate a fate and transport evaluation (as per DEQ's 2008 *Technical Guidance General Field Data Needs for Fate and Transport Modeling*), it is not clear in this section that discrete samples will be collected and analyzed as per the guidance. Clarify by adding that the described samples will also be collected for fate and transport evaluation and as per the guidance.

41. Page 19, Section 4.6.2, 3rd paragraph: Figure 10 is referenced here in describing the 43 decision unit grid. It appears that Figure 9 may be the correct reference. Revise as appropriate.

42. Page 20, Section 4.6.2, 2nd paragraph: This paragraph references Section 4.4.1, but more likely is meant to reference 4.6.1. Revise as appropriate.

43. Page 20, Sections 4.6.3 and 4.7: Refer to DEQ General Comment above and expand this investigation area by adding soil borings and monitoring wells as appropriate to effectively

evaluate groundwater flow, potential contaminant transport and interaction with surface water features in the area of the Industrial Landfill and Cedar Creek.

44. Page 33, Section 6.1: Please change the Montana DEQ contact to Lisa DeWitt, DEQ State Project Officer.

45. Figure 3: This figure indicates that a monitoring well will be installed due south of the Rod Mill, historically used to store hazardous waste. However, Figure 4 of the RI/FS Work Plan indicates that groundwater flow is to the west in the area of the Rod Mill. Please adjust the location of the well, if appropriate, to capture groundwater flow downgradient of the potential source.

46. Table 7: There are numerous landfills at the site and future site development and use is unknown. Add methane gas to the Target Compound List as elevated concentrations could present a future hazard and as per Section 4.5 of the SAP concentrations will be measured in the field.